

What is claimed is:

[Claim 1] 1. A method of forming a semiconductor structure, comprising:
providing a first and a second material;
processing the first material to form a portion of the semiconductor structure; and
detecting a condition of the second material to determine whether processing of the first material is complete.

[Claim 2] 2. The method of claim 1, wherein the second material comprises a fluorescent material, and wherein the detectable condition of the second material comprises a fluorescence of the second material.

[Claim 3] 3. The method of claim 1, wherein the second material is formed below the first material.

[Claim 4] 4. The method of claim 3, wherein the processing comprises removing a portion of the first material.

[Claim 5] 5. The method of claim 4, wherein the processing further comprises removing the second material having the detectable condition, and wherein processing of the first material is complete upon complete removal of the second material.

[Claim 6] 6. The method of claim 1, wherein processing of the first material is incomplete if the detectable condition of the second material is detected.

[Claim 7] 7. The method of claim 6, further comprising, if the processing of the first material is incomplete:

continuing the processing of the first material;
detecting the condition of the second material; and
repeating the processing and detecting steps until the detectable
condition of the second material is not detected.

[Claim 8] 8. The method of claim 1, wherein the second material comprises a sacrificial layer formed below the first material and having the detectable condition.

[Claim 9] 9. The method of claim 8, wherein the sacrificial layer comprises a fluorescent film, and wherein the detectable condition comprises fluorescence.

[Claim 10] 10. The method of claim 1, wherein the processing comprises chemical-mechanical polishing (CMP).

[Claim 11] 11. The method of claim 1, wherein the second material comprises a fluorescent material, wherein the detectable condition of the second material comprises fluorescence, and wherein the fluorescence of the second material is provided by doping the second material.

[Claim 12] 12. The method of claim 1, wherein the second material comprises a substance provided on the first material, wherein the substance includes a tag having the detectable condition.

[Claim 13] 13. The method of claim 12, wherein the processing of the first material is complete when the detectable condition of the tag is detected only on areas of the semiconductor device selected from the group consisting of: expected areas of the first material, expected areas of another material of the semiconductor structure, and no areas on the semiconductor structure.

[Claim 14] 14. The method of claim 12, wherein the detectable condition of the tag comprises fluorescence.

[Claim 15] 15. The method of claim 12, wherein the tag comprises a fluorescent molecule that provides the detectable condition, and wherein the fluorescent molecule binds to a material selected from the group consisting of: the first material and another material of the semiconductor structure.

[Claim 16] 16. A semiconductor structure for detecting completion of processing of a material, comprising:

a sacrificial layer formed below the material, the sacrificial layer having a detectable condition.

[Claim 17] 17. The semiconductor structure of claim 16, wherein the sacrificial layer comprises a fluorescent film, and wherein the detectable condition comprises fluorescence.

[Claim 18] 18. The semiconductor structure of claim 16, wherein the material comprises a liner for interconnects in a wiring level.

[Claim 19] 19. The semiconductor structure of claim 16, wherein the sacrificial layer is selected from the group comprising: europium thenoyltrifluoroacetate (EuTTA); chelates of La, Sm, Eu, Gd, Lu, Yb, Tb, Dy or Tm; or (beta)-diketone chelates including Eu benzoylacetate, Eu dibenzoylmethide or Eu hexafluoroacetate.

[Claim 20] 20. A method of forming a semiconductor device, comprising: providing a fluorescent material; and

using a fluorescence of the fluorescent material to determine a presence of a predetermined material of the semiconductor device.